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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,289	08/18/2003	Bong Kyu Kim	51876P383	7178

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EXAMINER	
CURS, NATHAN M	
ART UNIT	PAPER NUMBER
2613	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/645,289	KIM ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-8 and 11-16* is/are rejected.

7)☒ Claim(s) *2-4,9 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 5-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Amended claim 5 recites an optical modulation means for outputting a light through two different output terminals and also claims an optical circulator "for transmitting the encoded light into the optical modulation means". However, the specification does not support an optical circulator transmitting encode light into a two-output modulator.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 5 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Amended claims 1, 5 and 8 recite the limitation "the encoded light", in lines 9-10 of claims 1 and 5 and lines 11-12 of claim 8. Prior to this the claims recite generating code-light

and complement-code light, i.e. two different encoded lights. It's not clear what the scope of "the encoded light" is, one of the encoded lights or both of the encoded lights.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izadpanah (US Patent Application Publication No. 2004/0018018) in view of Dutt et al. ("Dutt") (US Patent No. 6236483).

Regarding claim 11, Izadpanah discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) encoding a light into a code or a complement code of the code; and b) transmitting the encoded light into the code or the complement code based on the polarity (`0` or `1`) of data to be transmitted by using one optical modulator (fig. 1a and paragraphs 0030-0034), wherein the encoding the light into the code or the complement code is performed according to a modified pseudo-noise code (paragraph 0054 and claim 9). Izadpanah does not disclose that the code has an equal number of ones and zeros. Dutt discloses optical CDMA using codes with an equal number of ones and zeros (col. 12, lines 56-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an equal number of ones and zeros for the code of Izadpanah, to provide the benefit of efficient use of source power, as suggested by Dutt.

Regarding claim 12, the combination of Izadpanah and Dutt discloses the optical CDMA transmitting method as recited in claim 11, wherein the step of encoding the light into the code or the complement code is performed by using filters having an assignment of wavelengths for the lights to be reflected or to be transmitted based on the modified pseudo-noise code (Izadpanah: paragraphs 0054 and claim 9).

7. Claims 11 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lam et al. ("Lam") ("Experimental demonstration of bipolar optical CDMA system using a balanced transmitter and complementary spectral encoding"; Lam et al.; Photonics Technology Letters, IEEE; Volume 10, Issue 10, Oct 1998, pages: 1504-1506.) in view of Dafesh (US Patent Application Publication No. 2004/0208233), and further in view of Dutt (US Patent No. 6236483).

Regarding claim 11, Lam discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) encoding a light into a code or a complement code of the code; and b) transmitting the encoded light into the code or the complement code based on the polarity (`0` or `1`) of data to be transmitted by using one optical modulator (fig. 1b and page 1504 col. 2). Lam does not disclose that encoding the light in to the code or complement code is performed according to a modified pseudo-noise code that has equal number of ones and zeros. Dafesh discloses optical CDMA and discloses advantages of CDMA coding that is based on cryptographically varied pseudorandom spreading codes (paragraphs 0003-0007). It would have been obvious to one of ordinary skill in the art at the time of the invention to base the CDMA coding of Lam on cryptographically varied pseudorandom spreading codes, to provide the benefit of inherently secure transmission, as taught by Dafesh. Dutt discloses optical CDMA using codes with an

equal number of ones and zeros (col. 12, lines 56-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an equal number of ones and zeros for the code of the combination, to provide the benefit of efficient use of source power, as suggested by Dutt.

Regarding claim 15, Lam discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) outputting a first light by turning on a first light source based on data to be transmitted and b) outputting a second light by turning on a second light source in opposition to the step a) based on the data to be transmitted (fig. 1a and page 1504, col. 2); and c) encoding the second light into a code, and encoding the first light into a complement code of the code, and then transmitting the encoded light into the code or the complement code (figs. 1a and 1b and page 1504, col. 2). Lam does not disclose that encoding the light into the code or the complement code is performed according to a modified pseudo-noise code that has equal number of ones and zeros. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Dafesh and Dutt with Lam as described above for claim 11.

8. Claims 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lam ("Experimental demonstration of bipolar optical CDMA system using a balanced transmitter and complementary spectral encoding"; Lam et al.; Photonics Technology Letters, IEEE; Volume 10, Issue 10, Oct 1998, pages: 1504-1506.) in view of Dafesh (US Patent Application Publication No. 2004/0208233), and further in view of Dutt (US Patent No. 6236483), as applied to claims 11 and 15 above, and further in view of Kartalopoulos ("Introduction to DWDM Technology"; IEEE Press, 2000, pages 142-144).

Regarding claims 12, and 16, the combination of Lam, Dafesh and Dutt discloses the optical CDMA transmitting apparatus and method as recited in claims 11 and 15, but does not disclose that the optical CDMA encoders perform encoding by using filters having an assignment of wavelengths for the light to be reflected or to be transmitted based on the modified pseudo-noise code. Kartalopoulos discloses reflective NxN optical switches based on MEMS (pages 142-144, section 10.6). It would have been obvious to one of ordinary skill in the art at the time of the invention to use MEMS switches for the 2x2 switches in the WDM system of Lam, to provide the benefit of low-loss connectivity and compact design as taught by Kartalopoulos.

9. Claims 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Dutt (US Patent No. 6236483) in view of Dafesh (US Patent Application Publication No. 2004/0208233).

Regarding claim 13, Dutt discloses an optical CDMA transmitting method used in an optical CDMA transmitting apparatus for transmitting bipolar data, comprising the steps of: a) outputting a light through a different output terminal based on the polarity (`0` or `1`) of data to be transmitted (fig. 12a, element 246 and col. 15, lines 8-21), and b) encoding the light outputted through a first output terminal into a code between the lights outputted in the step a), and encoding the light outputted through a second output terminal into a complement code of the code among the lights outputted in the step a), and then transmitting the encoded light into the code or the complement code (fig. 12a, elements 242, 244 and 250 and col. 15, lines 8-21), wherein the encoding the light into the code or the complement code is performed according to a code that has equal number of ones and zeros (col. 12, lines 56-61). Dutt does not disclose that the code is a pseudo-noise code. Dafesh discloses optical CDMA and discloses advantages of CDMA coding that is based on cryptographically varied pseudorandom spreading

codes (paragraphs 0003-0007). It would have been obvious to one of ordinary skill in the art at the time of the invention to base the CDMA coding of Dutt on cryptographically varied pseudorandom spreading codes, to provide the benefit of inherently secure transmission, as taught by Dafesh.

Regarding claim 14, the combination of Dutt and Dafesh discloses the optical CDMA transmitting method as recited in claim 13, and discloses that the step of encoding the light into the code and the complement code is performed by using filters having an assignment of wavelengths for the light to be reflected or to be transmitted based on the modified pseudo-noise code (Dutt: fig. 12a, elements 242 and 244 and col. 15, lines 33-62, as applicable in the combination).

Allowable Subject Matter

10. Claims 2-4, 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if the 35 USC § 112-2nd paragraph problems of the independent claims were corrected and if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Applicant's arguments filed 11 December 2006, with respect to claims 1-10 have been fully considered and are persuasive. Therefore, the prior rejections have been withdrawn. However, upon further consideration, new ground(s) of rejection are made in view of the new claim amendments creating 35 USC § 112 problems.

12. Applicant's arguments filed 11 December 2006, with respect to 35 USC § 102 anticipation of claims 11, 12, 13 and 15, have been fully considered and are persuasive based on the new claim amendments. Therefore, the prior rejections have been withdrawn. However, upon further consideration, new ground(s) of rejection are made in view of the combinations of references described above.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

14. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the

organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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